(Suggested outline for developing materials for teaching of electricity and its applications to the farm, home and rural community.)

ELECTRICITY IN MODERN RURAL LIVING

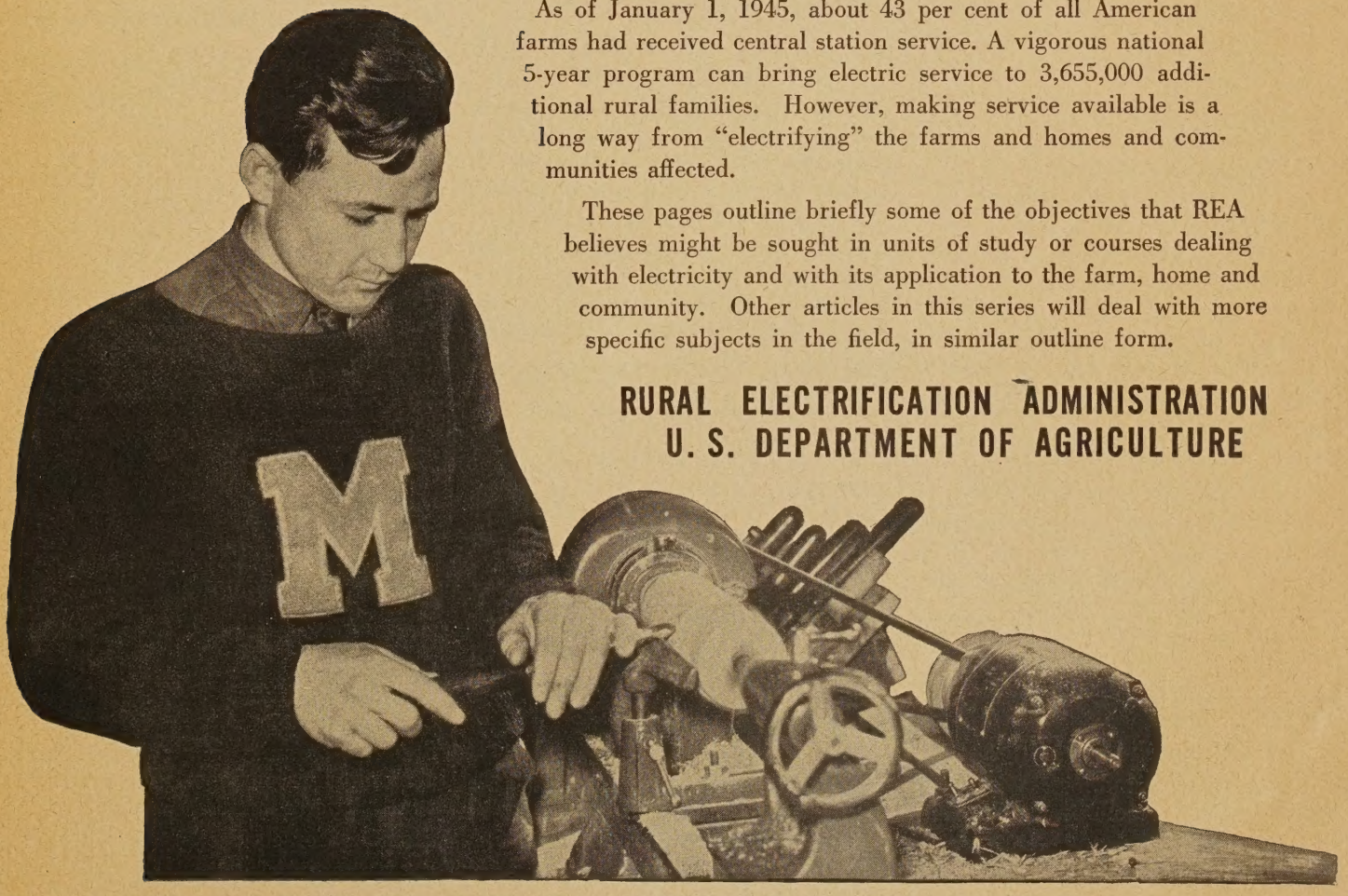
WHY TEACH RURAL ELECTRIFICATION?

RURAL young people today, as future farmers and as citizens of farm communities, face a new power age. They need to acquire new knowledge, develop new attitudes, and be taught new skills of a type entirely different from those their parents learned. Especially, they must learn how to integrate the facts they learn about electricity and its uses into the entire body of knowledge they acquire — on production, processing and marketing of farm products, on home-making and rural living as a whole.

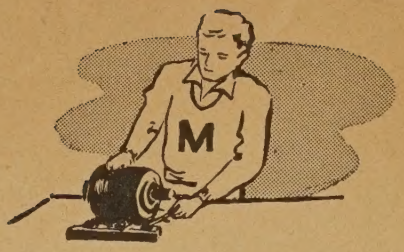
As of January 1, 1945, about 43 per cent of all American farms had received central station service. A vigorous national 5-year program can bring electric service to 3,655,000 additional rural families. However, making service available is a long way from "electrifying" the farms and homes and communities affected.

These pages outline briefly some of the objectives that REA believes might be sought in units of study or courses dealing with electricity and with its application to the farm, home and community. Other articles in this series will deal with more specific subjects in the field, in similar outline form.

RURAL ELECTRIFICATION ADMINISTRATION
U. S. DEPARTMENT OF AGRICULTURE



Objectives . . .



TO prepare rural young people to work and to live in a machine-powered world is both a responsibility and an opportunity for the school. The task is clearcut. The important broad objectives are:

1. To ground pupils thoroughly in the fundamentals of electricity and its applications.

2. To aid them in the planning of adequate wiring and lighting of their farm and home; in the selection of electrical equipment and appliances to meet the special needs of their farm and home.

3. To aid them in the operation and care of that equipment, including simple repairs; in computing load and calculating the operating costs of equipment.

4. To develop attitudes about and appreciations of the vast amount of electrical energy available, and ways in which it can be used for full rural service; of the social and economic benefits derived from availability of low-cost power for all rural America; of the scientific advance in the development of electrical devices to serve mankind; of the great possibilities for improving standards and techniques of farming through applications of electricity; of the development of small industries and vocational opportunities in the field of rural electrification.

Suggested outline for relating study of electricity to *Farm, Home and Community*

THE NATURE OF ELECTRICITY.

The electron theory.
Magnetism.
Electric currents and how they are set up; direct and alternating.
Electric circuits.
Electrical terms and definitions.
Use of measuring instruments — voltmeter, ammeter, watt-hour meter.
How electricity is generated and distributed to the consumer.
The electric system.
What transformers do.

WIRING SYSTEMS AND LIGHTING FOR FARM AND HOME.

Importance of adequate wiring and lighting.
Factors to consider in:

Planning Wiring Lay-Out.

Size of service to take care of present and future uses.
Size and number of branch circuits for present and future needs.
Type of outlets needed for the home, farm buildings and outdoor uses.
Location of switches and outlets for convenient use.

Planning the Lighting.

How light is measured.
Amount of light recommended for different eye tasks.
Selection and location of fixtures and lamps for good seeing and safety.
The effect of color of walls and ceilings upon efficiency of fixtures.

SELECTION OF EQUIPMENT FOR FARM AND HOME.

Consider types, designs, construction and performance of various kinds of equipment; purchase price; cost of special features; convenience of use; cost of operation; safety, versatility.

Consider use of equipment to increase farm income—through saving of time and labor, improved practices in production, processing and marketing, etc.

USE AND CARE OF EQUIPMENT.

Consider location for safe and convenient use.
Follow manufacturers' instructions for good use and proper care of equipment.
Study and compare results of different types of equipment.

BUILDING ELECTRICAL EQUIPMENT FOR THE FARM.

Types that can be built.
Tools needed.
Supervision and instructions.

Value of projects in construction costs; in helping farm boys and girls acquire new skills and knowledges in rural uses of electricity; in improving farm and home practices.

STUDY OF THE FARM WATER SYSTEM AND PLUMBING.

Factors to consider in planning:

Complete plumbing for farm home with adequate supply of hot and cold water.

Sanitary sewage disposal.

Ample supply of water under pressure for farm needs — livestock, poultry, and garden watering or small irrigation, fire protection.

Community cooperation to reduce cost of plumbing installations.

VOCATIONAL OPPORTUNITIES IN RURAL ELECTRIFICATION.

Development of new rural industries and other rural facilities.
Construction of new rural lines.
Modernization of community facilities.
Study of the uses of electricity in schools, churches, hospitals, and other community buildings.
Management and maintenance of rural electric systems.
Manufacturing of equipment and supplies for rural use.
Selling, servicing of equipment.

Study of organization and functioning of rural electric cooperatives and other rural power suppliers.

Planning for service to all rural people on an area-wide basis.

Suggested activities and methods of approach

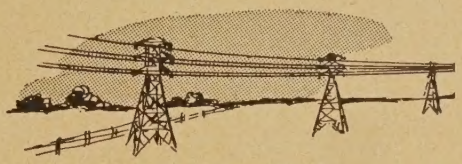
THE effective study of electricity and its rural applications calls for the development of activities more functional than those given in the general run of text books, because electrification is so closely knit with all other rural activities. The application of scientific principles to real life situations needs emphasis. With the wealth of good printed material and audio-visual aids easily available, and by making use of the facilities of local cooperatives or utility companies and electrical dealers, the lack of a laboratory or school shop need not keep the progressive study of electricity from being a comprehensive and fascinating one.

Here are some suggestions for developing activities related to various aspects of rural electrification. Many of these activities will be of special interest to vocational agriculture students, students of home economics, social sciences or in other special fields of rural education.

Field trips

A PROGRAMMED trip to a generating plant and local power office could be the means of initiating the field study of electricity. Such a trip would serve to give the students an overall picture both of the generation and transmission of the power that serves their community, county and region, and of the broad functions of the rural electric cooperative or utility company in providing various consumer services.

Visits to dealers in electrical equipment and supplies — and manufacturers if feasible — will help students to understand the scientific principles involved in the design, construction and testing of equipment. Such visits also provide a means of gathering specific facts on the selling and servicing of equipment.



To observe wiring and lighting already installed in farm homes and in farm buildings as to adequacy, value, convenience and safety would provide students with information for the study of wiring and lighting.

Similar visits to farmsteads and community enterprises making wide uses of electrical devices such as locker-freezer plants, canneries and workshops, to observe the equipment in operation, how it is cared for and its arrangement and installation for convenience and safety, would give students a better insight into the practical problems involved in efficient use and proper care.

Community Surveys

COMMUNITY surveys as a part of regular school work are an excellent way to acquaint students with the development of rural electrification in their own communities, and to stimulate interest in problems related to the study of electricity. Such surveys might well include (1) the extent to which farms, schools, churches and community enterprises are being served, (2) the possibilities for further electrification, (3) the uses now being made of electricity in the home and on the farm and the ways in which they contribute to increased farm profits, and (4) the present extent of and the possibilities for development of rural industries. A survey of the information available on the subject and as many contacts with authorities in the rural electrification and related fields as is feasible should also be included. Surveys such as outlined here can be set up and conducted with a minimum of time and effort:

Classroom demonstrations and preparation of Audio-visual Aids

WHERE laboratory facilities are limited the demonstration technique can be used effectively in the study of electricity. A wide variety of excellent materials such as charts, reference texts, lighting and wiring skits, cut-away models of equipment and films are available at little or no cost from manufacturers of electrical equipment and supplies. Such equipment as a watt-hour meter, voltmeter or ammeter can often be borrowed from the local power office for measuring electrical energy, determining the energy consumption of appliances and computing the cost of operation.

SCHOOL "REPAIR CLINICS"

Having the students bring small appliances from their homes for the study of selection, operation and care is another way of securing necessary working equipment. In one school a "repair clinic" was sponsored jointly by the classes in home economics, shop and science. The students brought equipment in need of repair either from their own or neighboring homes. Under the direction of the teachers each piece was gone over carefully to

determine the type of repair needed. In most instances the repairs were made by the student at the clinic. A few cases needed the attention of skilled electricians.

DEMONSTRATION MATERIALS

Many types of demonstration materials can be prepared by the students themselves, such as charts, exhibits (showing for example, good and poor practices in wiring and lighting), use and care of equipment, models of home-made equipment. In one school the shop class made a wiring board—one that could be plugged into a lighting outlet — to show the use of electricity for light, heat and power. The heating element from a small reflector heater and the motor of a small fan were used to illustrate the principle of heat and power. A small fuse panel and circuit breaker were also wired into this board so that their use could be demonstrated. Samples of different type of switches, outlets, conductors and fuses were mounted on the sides of the board. The construction of the board not only provided practical application of the fundamentals for the class, but also furnished good illustrative material widely used by other classes.

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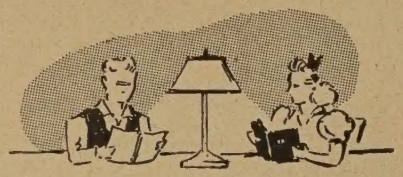

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